UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,663	08/31/2001	Shigeo Kittaka	N36-135850M/TH	7814

30743 7590 06/22/2006

WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

EXAMINER	
STOCK JR, GORDON J	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 06/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/942,663	KITTAKA ET AL.	
	Examiner	Art Unit	
	Gordon J. Stock	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *14,18,19 and 21-27* is/are allowed.

6)☒ Claim(s) *1,3-13,15,16 and 28* is/are rejected.

7)☒ Claim(s) *17 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 14, 2006 has been entered.

Drawings

2. The Drawing received on April 14, 2006 has been accepted by the Examiner.

Claim Objections

3. **Claim 10** is objected to for the following: improper dependence on **claim 1** which is a diffraction grating. Examiner suggests that line 2 that reads 'an optical device constituted by a periodic multilayer structure as defined in claim1' read –the diffraction grating constituted by the periodic multilayer structure as defined in claim 1--. And Examiner suggests substituting 'said optical device' with –said diffraction grating- in claim 10. Corrections required.

4. **Claim 11** is objected to for the following: on lines 4-5 'said substrate' lacks antecedent basis. Examiner suggests using –said transparent substrate-. Corrections required.

5. **Claim 15** is objected to for the following: on line 5 'the beam incidence surface is a surface parallel' lacks antecedent basis. Examiner suggests using –a beam incidence surface is a surface parallel-. Correction is required. **Claim 16** is objected to for depending on an objected base claim.

6. **Claim 17** is objected to for the following: on line 5 'the beam incidence surface is a surface parallel' lacks antecedent basis. Examiner using –a beam incidence surface is a surface parallel-. Correction is required.

7. **Claim 20** is objected to for the following: k_s is not in the satisfied condition of line 3. In addition, Examiner suggests positively citing 'm is an integer not smaller than 2' of line 3 by having '(m is an integer not smaller than 2)' read -; m is an integer not smaller than 2;-. Correction is required.

8. **Claim 28** is objected to for the following: 'the photonic crystal' of line 1 lacks antecedent basis. Examiner suggests using 'the one-dimensioned photonic crystal.' Correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. **Claims 1, 3-13, and 28** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As for **claim 1**, the limitation 'the beam exit surface' of line 13 is indefinite, for it is unclear if the beam exit surface may or may not be parallel to layers of said multilayer surface since 'said end surface' of line 11 with a beam incident crosses perpendicularly has antecedent basis with the end surface of lines 2-3. **Claims 3-13 and 28** are rejected for being dependent on a rejected base claim.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. **Claims 1, 3, 4, and 6-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Burt et al. (6,052,213)—previously cited** in view **Todori et al. (6,002,522)—previously cited.**

As for **claims 1, 3, 4, 6-11,** Burt in an optical diffraction grating teaches the following: a periodic multilayer structure comprising layers of InP and an end surface not parallel but approximately perpendicular to the layer surfaces is a beam incident surface and an exit surface also is perpendicular as a beam exit surface (Fig. 7a; col. 5, lines 65-67; col. 6, lines 1-15); wherein, the structure is a one-dimensioned photonic crystal (**claim 1**: col. 6, lines 17-35); whereby the beam is demultiplexed so that beam components are made to exit from the beam exit surface at different angles (Fig. 1: diffracted beam; Fig 9 with col. 10, lines 33-45) with the period of the pillars comprising layers formed out of different materials (**claim 3**: Figs. 7a and 7b); with the pillars being able to vary continuously in size at different depths or varying in cross section such as being ellipsoidal (**claim 4**: col. 6, lines 13-17); wherein the end surface and exit surface crosses perpendicularly said layer surfaces and are parallel to each other (**claims 6-8**: Fig. 1; Fig. 7a; Fig. 9a); wherein the structure formed and repeated due to dependence on wavelength (**claims 9 and 11**: col. 6, lines 20-27); the multilayer structure is an optical multilayer film of epitaxial layers (**claims 9 and 11**: col. 5, lines 1-45); the structure is formed upon a transparent substrate and the beams are reflected in the transparent substrate and taken

out of said substrate (**claim 11**: Fig. 1: **2**; col. 4, lines 1-10); means for making a mixture of various luminous flux (**claim 10**: Fig. 1: w; Fig. 9a: 93) and means for detecting rays of differing angles (**claim 10**: Fig. 9a: 95 and output to terminal equipment). Burt is silent concerning the particular period to wavelength relation as stated in **claim 1**. However, Todori in an optical functional element comprising a photonic crystal teaches that the specific period to wavelength relation is necessary for proper signal transmission in optical communications; whereas, the period is equal to one half the wavelength and thereby is greater than or equal to one half the wavelength divided by any refractive index greater than or equal to 1.0 (col. 6, lines 35-50). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the photonic crystal device have a period greater than or equal to one half the wavelength divided by the refractive index in order to have proper optical signal transmission. In regards to the average refractive index in the period to wavelength relation, refractive index is an inherent property of optically transmissive materials; wherein, the value is 1.00 for vacuum and greater than one for any medium that is not vacuum. Therefore, in regards to Todori's period being half the wavelength with refractive indices being no less than 1.00 for optically transmissive materials, the period that equals one half the wavelength is greater than or equal to the wavelength divided by two times the average refractive index with indices being from 1.00 or larger.

13. **Claim 1, 3, 5, 6, 9-13, 28** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Normandin et al. (5,111,466)—previously cited** in view **Todori et al. (6,002,522)—previously cited.**

As for **claims 1, 3, 6, 9-11, and 28,** Normandin in an optical multilayer structure for harmonic laser emission discloses: a periodic multilayer structure with an end surface not parallel to layer surfaces of said multilayer structure used as a beam incidence or exit surface (**claims 1 and 11**); layers are formed of different materials (**claim 3**); end surface on which beam is incident crosses said layer surfaces substantially perpendicular (**claims 1 and 6**); one structure on substrate is repeated with respect to wavelength used (**claims 9 and 11**); means for making a mixture of various luminous flux having a plurality of wavelengths (**claim 10**); and means for detecting beam rays exiting at different angles in accordance to frequencies (**claim 10**); beam rays made to exit from said multiplayer film toward said substrate are reflected in the inside of said substrate and taken out from an end surface of said substrate (**claim 11**) (Figs. 1, 8, 9; col. 3, lines 1-15 and 55-67; col. 6, lines 55-65; col. 7, lines 15-30); whereas, refractive indices are continuously changing (**claim 28**)(col. 3, lines 15-30) and a refractive index difference between layers of different materials may be used (**claim 28**) (col. 4, line 35-50). Normandin does not explicitly state that the periodic multilayer structure is a one-dimensional photonic crystal, but he suggests it for the structure modulates input light with regions of differing indices of refraction (col. 3, lines 15-25) with nonlinear harmonic effects (col. 6, line 35-50). Todori in an optical functional element comprising photonic crystal teaches that one dimensional photonic crystals are multilayered dielectric substances that produce second order harmonic effects with light passing through parallel to the layer surfaces with modulating effects due to photonic band gap (col. 5, lines 54-65; Fig. 9; col. 13, lines 15-25; col. 5, lines 20-35). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made that Inoue's structure is one dimensional photonic crystal, for the periodic multilayer structure modulates

input wavelength light and produces nonlinear harmonic effects indicative of having a photonic band structure.

Normandin is silent concerning the particular period to wavelength relation as stated in **claim 1**. However, Todori in an optical functional element comprising a photonic crystal teaches that the specific period to wavelength relation is necessary for proper signal transmission in optical communications; whereas, the period is equal to one half the wavelength and thereby is greater than or equal to one half the wavelength divided by any refractive index greater than or equal to 1.0 (col. 6, lines 35-50). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the photonic crystal device have a period greater than or equal to one half the wavelength divided by the refractive index in order to have proper optical signal transmission. In regards to the average refractive index in the period to wavelength relation, refractive index is an inherent property of optically transmissive materials; wherein, the value is 1.00 for vacuum and greater than 1.00 for any medium that is not vacuum. Therefore, in regards to Todori's period being half the wavelength with refractive indices being no less than 1.00 for optically transmissive materials, the period that equals one half the wavelength is greater than or equal to the wavelength divided by two times the average refractive index with indices being from 1.00 or larger. Also Normandin demonstrates that the average refractive index is above 3.2 (Fig. 3).

In regards to **claim 1**, Normandin discloses "wherein said end surface of said periodic multilayer structure on which a beam is incident crosses said layer surfaces of said multilayer surface perpendicularly, whereby the beam is demultiplexed so that beam components are made

to exit from the beam exit surface at different angles (col. 7, lines 55-60). See Figs. 8 and 9a:

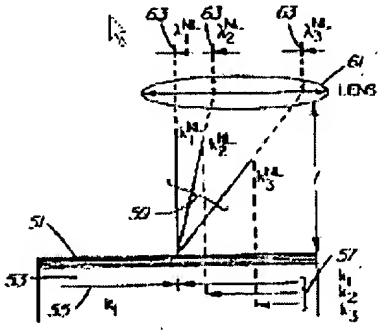

FIG. 8

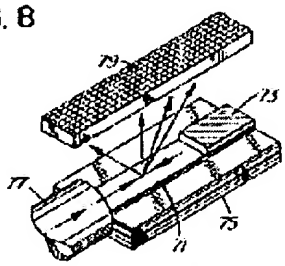

FIG. 9

As for **claim 5**, Normandin in view of Todori discloses everything as above (see **claim 1**). Normandin is silent concerning a maximum refractive index is not smaller than .1 in a wavelength used. However, Todori discloses that at least a .1 refractive index difference is needed for modulating a wavelength of light (col. 10, lines 5-10). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the maximum refractive index be at least .1 in order to modulate the wavelength of light entering the optical device.

As for **claim 12**, Normandin in view of Todori disclose everything as above (see **claim 1**). In addition, Normandin discloses two incident surfaces perpendicular to said layer surfaces and one surface parallel to said layer surfaces as a beam exit surface (Fig. 1: 1, 3, 11).

As for **claim 13,** Normandin in view of Todori discloses everything as above (see **claim 12**). Again, Normandin is silent concerning the particular period to wavelength relation.

However, Todori in an optical functional element comprising a photonic crystal teaches that the specific period to wavelength relation is necessary for proper signal transmission in optical communications; whereas, the period is equal to one half the wavelength and thereby is greater than or equal to one half the wavelength divided by any refractive index greater than or equal to 1.0 (col. 6, lines 35-50). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the photonic crystal device have a period greater than or equal to one half the wavelength divided by the refractive index in order to have proper signal transmission in optical communications. In regards to the average refractive index in the period to wavelength relation, refractive index is an inherent property of optically transmissive materials; wherein, the value is 1.00 for vacuum and greater than 1.00 for any medium that is not vacuum. Therefore, in regards to Todori's period being half the wavelength with refractive indices being no less than 1.00 for optically transmissive materials, the period that equals one half the wavelength is greater than or equal to the wavelength divided by two times the average refractive index with indices being from 1.00 or larger. Also Normandin demonstrates that the average refractive index is above 3.2 (Fig. 3).

14. **Claims 7, 8, 15, and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Normandin et al. (5,111,466)—previously cited** in view **Todori et al. (6,002,522)—previously cited** further in view of **Lin et al. (2001/0012149).**

As for **claim 7**, Normandin in view of Todori discloses everything as above (see **claim 1**). Though Normandin discloses a demultiplexer (col. 7, lines 55-60), Normandin is silent concerning an end surface of said periodic multilayer structure from which beam is made to exit crosses said layer surfaces of said multilayer structure. However, Lin in optical elements

comprising photonic crystals discloses an optical multiplexer/demultiplexer (Fig. 12c). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have an end surface of said periodic multilayer structure from which beam is made to exit cross said layer surfaces of said multilayer structure in order for the device to also provide multiplexing.

As for **claim 8**, Normandin in view of Todori discloses everything as above (see **claim 1**). Though Normandin discloses a demultiplexer with two perpendicular incident surfaces and an exit surface parallel to the layer surfaces (col. 7, lines 55-60; Fig. 9). Normandin is silent concerning having two end surfaces parallel to each other for both incidence and exiting of beam. However, Lin in optical elements comprising photonic crystals discloses an optical multiplexer/demultiplexer (Fig. 12c). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have two end surfaces parallel to each other for both incidence and exiting of beam in order for the device to also provide multiplexing.

As for **claim 15**, Normandin discloses a periodic multilayer structure (col. 3, lines 55-60) with an end surface not parallel to layer surfaces of said multilayer structure used as a beam incidence or exit surface (Fig. 9: two perpendicular surfaces to layer surfaces as incident surfaces and one surface parallel to layer surfaces as an exit surface). Normandin does not explicitly state that the periodic multilayer structure is a one-dimensional photonic crystal, but he suggests it for the structure modulates input light with regions of differing indices of refraction (col. 3, lines 15-25) with nonlinear harmonic effects (col. 6, line 35-50). Todori in an optical functional element comprising photonic crystal teaches that one dimensional photonic crystals are multilayered dielectric substances that produce second order harmonic effects with light passing through

parallel to the layer surfaces with modulating effects due to photonic band gap (col. 5, lines 54-65; Fig. 9; col. 13, lines 15-25; col. 5, lines 20-35). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made that Inoue's structure is one dimensional photonic crystal, for the periodic multilayer structure modulates input wavelength light and produces nonlinear harmonic effects indicative of having a photonic band structure.

And Normandin is silent concerning a beam incidence surface being parallel to said layer surfaces with the beam exit surface being approximately perpendicular to said layer surfaces. Normandin discloses a demultiplexer with a beam incidence surface perpendicular to said layer surfaces and a beam exit surface being approximately parallel to said layer surfaces (Fig. 9: two perpendicular surfaces to layer surfaces as incident surfaces and one surface parallel to layer surfaces as an exit surface). However, Lin in optical elements comprising photonic crystals discloses an optical multiplexer/demultiplexer (Fig. 12c). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have a beam incidence surface being parallel to said layer surfaces with the beam exit surface being approximately perpendicular to said layer surfaces in order for the device to also provide multiplexing.

As for **claim 16**, Normandin in view of Todori and Lin discloses everything as above (see **claim 15**). Again, Normandin is silent concerning the particular period to wavelength relation. However, Todori in an optical functional element comprising a photonic crystal teaches that the specific period to wavelength relation is necessary for proper signal transmission in optical communications; whereas, the period is equal to one half the wavelength and thereby is greater than or equal to one half the wavelength divided by any refractive index greater than or equal to 1.0 (col. 6, lines 35-50). Therefore, it would be obvious to one of ordinary skill in the

art at the time the invention was made to have the photonic crystal device have a period greater than or equal to one half the wavelength divided by the refractive index in order to have proper signal transmission in optical communications. In regards to the average refractive index in the period to wavelength relation, refractive index is an inherent property of optically transmissive materials; wherein, the value is 1.00 for vacuum and greater than 1.00 for any medium that is not vacuum. Therefore, in regards to Todori's period being half the wavelength with refractive indices being no less than 1.00 for optically transmissive materials, the period that equals one half the wavelength is greater than or equal to the wavelength divided by two times the average refractive index with indices being from 1.00 or larger. Also Normandin demonstrates that the average refractive index is above 3.2 (Fig. 3).

Allowable Subject Matter

15. **Claims 14, 18, 19, 21-27** are allowed.

Claims 17 and 20 would be allowable if rewritten to overcome the objections above.

As to **claim 14**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an optical device the particular condition being satisfied, in combination with the rest of the limitations of **claims 14, 18-27.**

As to **claim 17**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an optical device the particular condition being satisfied, in combination with the rest of the limitations of **claim 17.**

Response to Arguments

16. Applicant's arguments, see Remarks page 12, filed April 14, 2006, with respect to the rejections under 35 U.S.C. 103(a) with Inoue have been fully considered and are persuasive. The

previous rejection under 35 U.S.C. 103(a) has been withdrawn. Applicant's arguments filed April 14, 2006 in regards to previous rejections under 35 U.S.C. 103(a) with respect to Normandin et al. (5,111,466) and Burt et al. (6,052,213) have been fully considered but they are not persuasive. Specifically, on page 10 that neither reference teaches separating beams into beam components different in wavelength, Examiner disagrees. Burt discloses whereby the beam is demultiplexed so that beam components are made to exit from the beam exit surface at different angles (Fig. 1: diffracted beam; Fig 9 with col. 10, lines 33-45). And Normandin discloses "wherein said end surface of said periodic multilayer structure on which a beam is incident crosses said layer surfaces of said multilayer surface perpendicularly, whereby the beam is demultiplexed so that beam components are made to exit from the beam exit surface at different angles (col. 7, lines 55-60). See Figs. 8 and 9a:

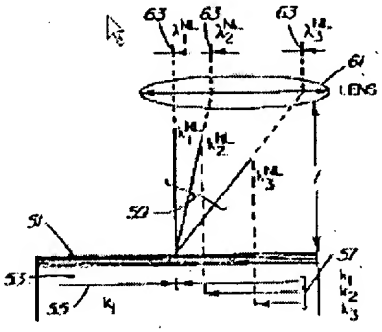

FIG. 8

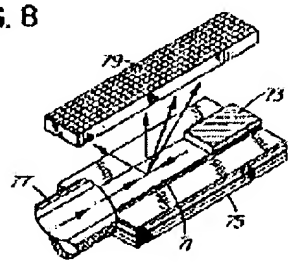

FIG. 9

As for the argument that the grating of claim 1 can be used for separating a beam into beam components different in the direction of polarization on page 11 of Remarks, it is noted that the

features upon which applicant relies (i.e., 'separating a beam into beam components different in the direction of polarization') are not recited in the rejected claim 1. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Also 'can be used for separating a beam into beam components different in the direction of polarization,' it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ F.2d 1647 (1987).

In regards to the argument on page 11 concerning satisfying the particular wavelength to period condition, there is no mention of the primary references of Burt et al. and Normandin et al. in view of Todori et al. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

As for Burt et al. and Normandin et al. not using an average refractive index on page 11 of Remarks, Examiner disagrees. As for Burt not working with an average refractive index for Burt uses a material with a variable refractive index in the photonic crystal in order for Burt's grating to function as a tuneable filter, Examiner disagrees. Burt states that a photonic crystal does have periodic variation in refractive index because of the differing layers (col. 1, lines 45-55), and as for not using an average refractive index Examiner disagrees; for Burt states that two different refractive indices are used (col. 2, lines 48-50); wherein, 'may have a refractive index which is variable' (col. 2, lines 60-61) does not preclude 'having a constant refractive index.'

As for Normandin not working with an 'average' refractive index, Examiner disagrees, for Fig. 3 shows predominately two refractive indices with 760 angstroms predominately at the average of the two.

In regards to **claims 15-16** that were previously considered allowable, the Examiner apologizes for the inconvenience but upon further search, a rejection has been made. See above.

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: **(571) 273-8300**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431. The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached at 571-272-2800 ext 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gs
June 5, 2006

Gregory J. Toatley, Jr.
Supervisory Patent Examiner
Art Unit 2877